

All About Asthma: Top Resources for Children, Adolescents, and Their Families

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KEY WORDS

Asthma, Web, applications, resources

Asthma is the most common chronic respiratory condition in children. The Centers for Disease Control and Prevention (CDC, 2011) reported that asthma affected 7.1 million children, with 4.1 million experiencing an asthma attack. The primary goal of asthma management is to optimize asthma control. Optimal control of asthma demands that children and adolescents and their families track daily symptoms and recognize when treatment needs to be adjusted to prevent asthma exacerbations. This article will focus on high-quality

informational and educational resources about asthma for children, adolescents, and their parents on the World Wide Web (Web). Mobile asthma management applications (apps) that may improve the ability of children, adolescents, and their families to manage asthma and recognize their unique needs will also be addressed.

GOOGLING FOR ASTHMA

The Internet has become a significant source of health information and support for persons with chronic conditions. Sixty-five percent of adults with at least one chronic condition reported having Internet access, with 81% of those users going online for health information (Fox & Purcell, 2010). Ninety-five percent of adolescents (ages 12 to 17 years) go online, with 74% using a mobile phone or tablet to access the Internet (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). It is reasonable to extrapolate from these statistics that a significant percentage of children and adolescents with a chronic condition will also go online for health information and support.

Eighty percent of Internet users seeking health information go online using a popular search engine rather than going to a specific health information Web site (Fox & Duggan, 2013). Searching online for health information has never been easier. However, finding the right information quickly means selecting the right

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keywords to conduct the search. In general, the use of the single keyword will result in too broad a search. By typing two to three relevant keywords into the search box, such as *asthma infant* or *asthma action plan*, the search engine will match those keywords to the text that appears on a Web site. If a person is interested in a particular category of asthma, then entering that descriptor ahead of asthma in the search box will result in even more relevant search results (e.g., *exercise-induced asthma child* or *mild asthma child*). In addition, as the user types in a search query, Google (as well as other browsers) will automatically suggest alternative searches and provide links to related searches at the bottom of the page. Remember, how browsers are programmed to make these determinations is a bit of a mystery to the everyday online user.

HIGH-QUALITY ASTHMA SITES

Browsers, such as Google, use complex algorithms to determine the “quality” of the content on a Web site. Attempting to determine what signals a quality site to Google or Bing is beyond the scope of this article; however, browsers today do include “higher quality” Web sites at the top of the search results. In the United States, uniformed resource locator (URL) addresses that end in .edu (educational institutions), .gov (national and state government), or .org (nonprofit organization) are generally the most reliable sources of health information. When entering “asthma” into the search box of a browser, the health information user will find that many of the sites at the top of the search results have URLs that end in .edu, .gov, and .org. The health information on these types of sites is generally viewed as more trustworthy because experts review and update it on a regular basis.

Many professional, organizational, and governmental agencies provide Web-based resources about asthma that may be helpful to older adolescents and parents. **Box 1** provides the names and URLs of asthma-related sites that provide trustworthy health information about asthma. Many of these general organizations and agencies provide education, advocacy, and sources of local support for children and adolescents with asthma and their families.

Kidshealth.org (<http://kidshealth.org>), sponsored by the Nemours Foundation, is always a good place to begin to find reliable information about a wide range of health conditions in children. The site breaks down the same health content across four audiences: parents, kids, teens, and educators. Content is written at an age-appropriate level and includes games and animations to help a child or adult understand complex medical information. A great feature on Kidshealth is the ability for the user to click the “Listen” link to download the audio clips for a section. An added feature on this site is the highlighted read-along text (by word and sentence) during narration, which accommodates literacy differ-

BOX 1. General information, advocacy, and support for children and adolescents with asthma and their families

- Allergy & Asthma Network/Mothers Of Asthmatics
www.aanma.org
- American Academy of Allergy, Asthma & Immunology
www.aaaai.org
- American College of Allergy, Asthma & Immunology
www.acaai.org
- American Academy of Pediatrics
www.aap.org
- American Lung Association
www.lung.org
- Asthma and Allergy Foundation of America
www.aafa.org
- Centers for Disease Control and Prevention
www.cdc.gov/asthma
- National Heart, Lung, and Blood Institute
www.nhlbi.nih.gov
- U.S. Environmental Protection Agency
www.epa.gov/asthma

ences among users. Kidshealth in the Classroom (<http://classroom.kidshealth.org>) provides educators with complete lesson plans, handouts, and activities for preschool children through grade 12 about health-related topics, including asthma.

The WebMD network maintains several Web sites that provide up-to-date information about asthma for consumers and health professionals. The consumer-oriented WebMD site (<http://www.webmd.com/asthma>) hosts an Asthma Health Center that includes helpful articles, videos, a moderated asthma community, and a special section on Children’s Asthma. Other Web sites in this network include Medscape and eMedicine, which provide information for health care professionals, and eMedicineHealth, which provides consumer-oriented information similar to what is found on WebMD. Asthma at About.com (<http://asthma.about.com>) is another comprehensive information resource on the Web. The About guide for this topic is a physician who is board-certified in pediatrics and in allergy and immunology.

Always encourage children, adolescents, and parents to discuss any online health information they have questions about with their health care provider. Ask them to bring in hard copies of the information or bookmark the Web pages on their mobile device to share during a clinic visit. Remind them to exercise caution if a site is filled with advertisements or is funded by an outside source, which might bias the presentation of health information on that site.

JUST FOR KIDS AND TEENS

Patient education is one of four key components of asthma care as outlined in the National Asthma

Education and Prevention Program guidelines (<http://www.nhlbi.nih.gov/about/naepp>). Optimal patient education should include information regarding self-management, which includes knowing how to monitor symptoms, avoid asthma triggers, and adjust medications and when to seek the advice of a health care provider or emergency treatment. Box 2 includes the names and URLs of sites with asthma-related interactive games and activities. Most of these sites use an “edutainment” (education + entertainment) approach to engage children in learning about asthma.

Remind parents to explore popular children’s activity and game sites for educational media and activities about asthma, especially for younger children. Nick Jr. has Asthma Activities for Preschoolers, as well as the Kids Asthma Toolbox, which includes activities to help children identify triggers and learn what to do when an asthma attack occurs. Public Broadcasting Service KIDS includes Buster Baxter: Lung Defender (<http://pbskids.org/arthur/games/lungdefender>), an interactive game focused on asthma triggers. Finally, Sesame Workshop, in collaboration with United Healthcare, has developed the Sesame Street A is for

Asthma (<http://www.sesamestreet.org/parents/topicsandactivities/toolkits/asthma>) tool kit that is filled with activities to help children, parents, and caregivers learn how to maintain asthma control and avoid asthma attacks. Also available is Brain POP, an animated educational site for educators (or parents) who teach children from preschool on up. Brain POP (<http://www.brainpop.com>) includes a Health category with a section on Asthma (free access) and the peak flow meter (subscription required).

MOBILE ASTHMA APPS

Digital health technology is rapidly expanding for asthma management. Mobile asthma management apps may include information about asthma, symptom diaries, medication reminders, GPS inhaler attachments, and early warning software for asthma triggers. Some apps claim to be able to accomplish some level of customization to the patient’s asthma action plan to provide more tailored management advice. Asthmapolis is a mobile app that uses a sensor to track medication use; the sensor syncs with an individual’s smartphone, and as a result event logs are automatically generated rather than being dependent on an individual entering log data. Several apps provide visual output that can be shared with a health care provider either during a clinic visit or sent in remotely when a change in the asthma action plan is indicated. AsthmaSense recently announced a cloud portal that allows the patient, family, and health care provider to monitor, store, and share an individual’s asthma data to potentially manage asthma more effectively (iSonea Ltd., 2013).

Box 3 provides a list of some popular asthma apps that can be found in the iTunes Store or on Google

Mobile asthma management apps may include information about asthma, symptom diaries, medication reminders, GPS inhaler attachments, and early warning software for asthma triggers.

BOX 2. Additional asthma links for children and adolescents

- AIR Square (Adolescents)
<http://www.AIRsquare.ca>
- Air Quality Index for KIDS
<http://airnow.gov/index.cfm?action=aqikids.index>
- AsthmaKids.ca
<http://www.asthmakids.ca>
- The Asthma Wizard
<http://www.nationaljewish.org/healthinfo/pediatric/asthma/asthma-wizard/index.aspx>
- Don’t Let Asthma Keep You Out of the Game (podcast)
<http://www2c.cdc.gov/podcasts/player.asp?f=8622396>
- Dusty the Asthma Goldfish and His Asthma Triggers Funbook
<http://www.epa.gov/asthma/parents.html>
- Huff & Puff: An Asthma Tale
<http://vimeopro.com/healthnutsmedia/huff-and-puff-an-asthma-tale>
- Just for Kids (games and puzzles)
<http://www.aaaai.org/conditions-and-treatments/just-for-kids.aspx>
- Kids with Asthma
<http://www.kidswithasthma.com.au>
- Lungropolis: Attack of the Mucous Mob
<http://www.lungropolis.com>
- Quest for the Code Asthma Game (7–15 years)
<http://www.starlight.org/Default.aspx?id=1096&terms=Quest+for+the+Code>
- Sailor The Puffer Fish: PUFF’D (5–10 years)
<http://www.sailor.asthmawaikato.co.nz>

AIR, Asthma Information Resource.

BOX 3. Popular mobile asthma management applications

- Asthma Buddy
- Asthma MD
- Asthma Pulse
- AsthmaCheck
- Asthmapolis
- AsthmaSense
- AsthmaTrack

Play. The reader is encouraged to review the screenshots for these applications to get an idea of the range of self-management materials included. Although these tools are promising, more research evidence is needed to support the clinical or financial benefits of these apps (NEHI, 2012). In a recent review of 103 asthma apps, Huckvale, Car, Morrison, & Car (2012) found that only three apps met their definition of providing comprehensive asthma information. To navigate the maze of mobile health apps, the reader is encouraged to check out iMedicalApps (<http://www.imedicalapps.com>), an online publication written by a team of health care professionals that provides reviews on mobile health technology and apps.

LOOKING TO THE FUTURE

Health care providers can only recommend asthma education and management tools that are safe and offer accurate information. Will Web-based strategies and mobile devices provide more reliable data about a patient's health? Will they result in better patient care decisions? Only continuing review and well-controlled clinical trials will answer those

questions. This is uncharted but very promising territory.

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